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David Dryer — *Never Say Never Again* 4

Never Say Never Again — the maverick James Bond film starring the original 007, Sean Connery — emerged this fall as one of the series' strongest entries. To helm its postproduction opticals, producer Jack Schwartzman selected Oscar nominee David Dryer. Dryer — who utilized the high-tech facilities of Apogee — details the techniques employed to produce the pivotal cruise missile hijacking, the holographic videogame confrontation between Bond and Largo, and other less apparent illusions. Interview by Don Shay.

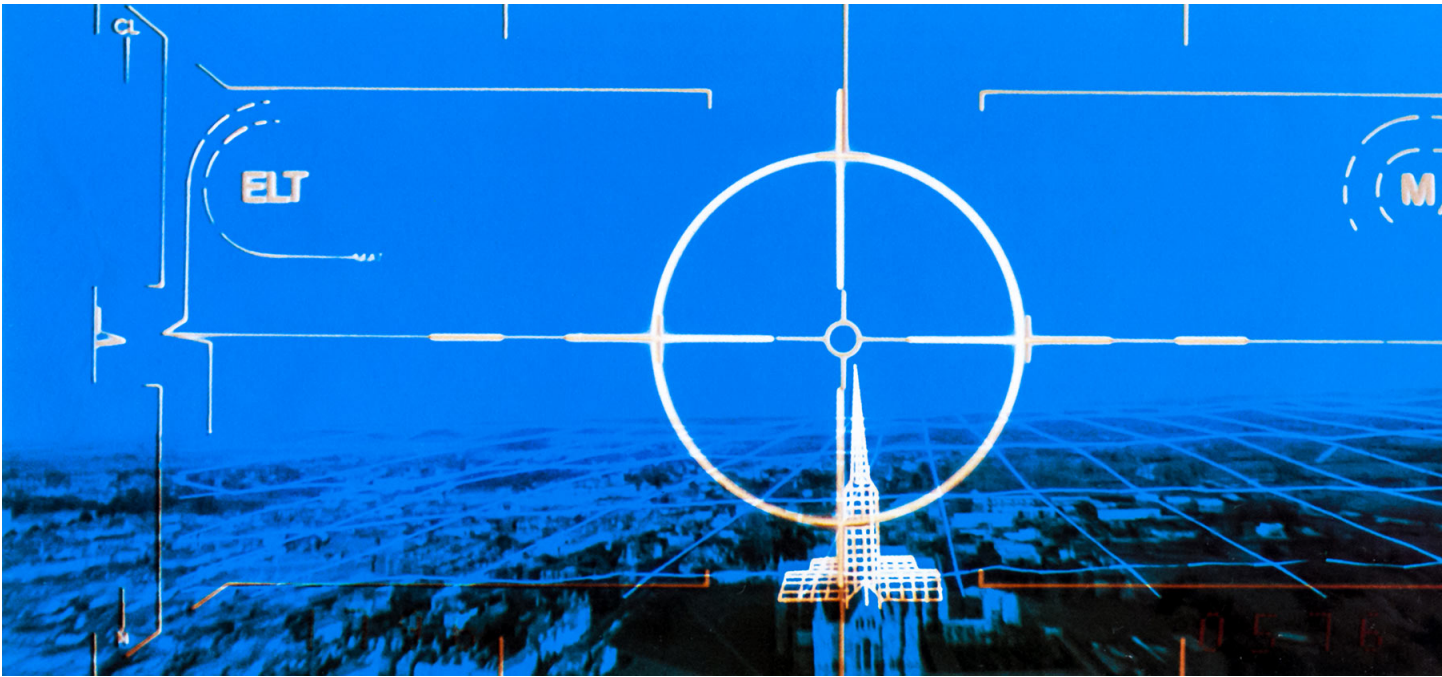
Waging a Four-Minute War 28

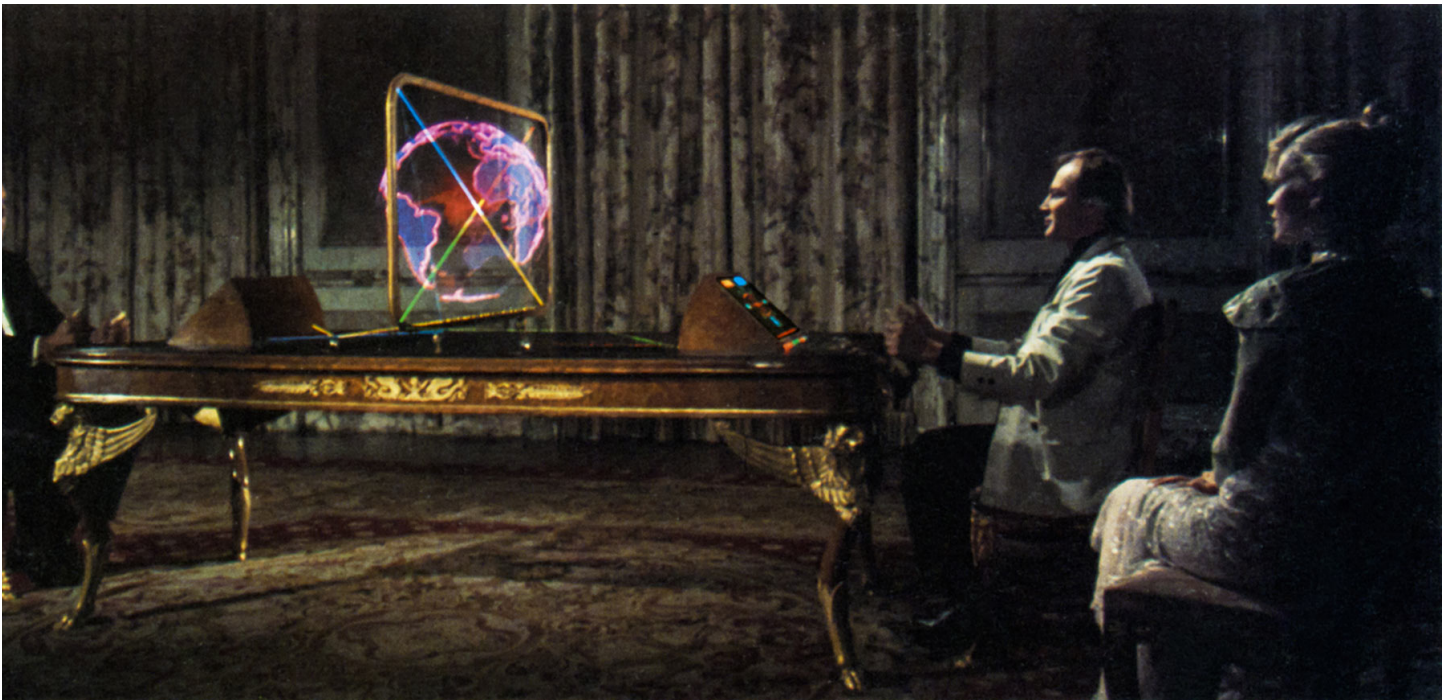
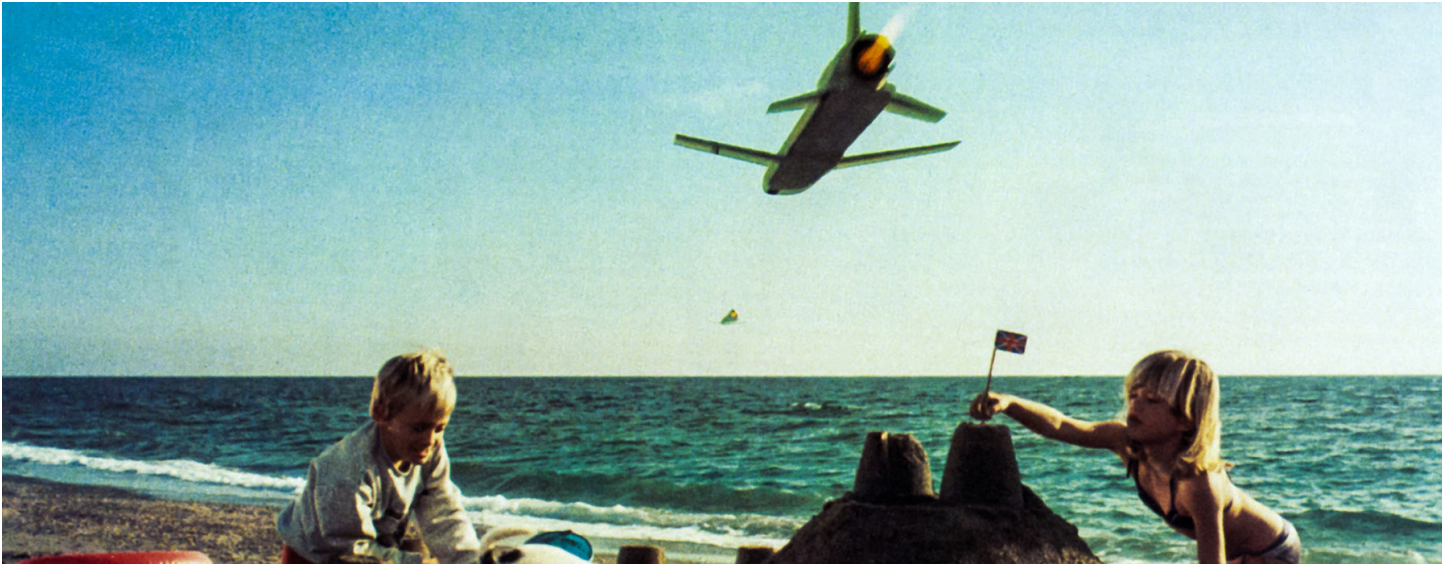
In a storm of protest and praise, ABC's video presentation of *The Day After* descended upon the American public as a grim reminder of the potential horrors of nuclear weaponry. Recalling the highly-charged atmosphere of creative enthusiasm and emotional abhorrence, effects supervisor Robert Blalack and members of his Praxis Film Works team discuss their involvement on the film — augmented by Mike Minkow of Movie Magic; and with additional recollections from director Nicholas Meyer, his predecessor Robert Butler, and production designer Peter Wooley. Article by Adam Eisenberg.

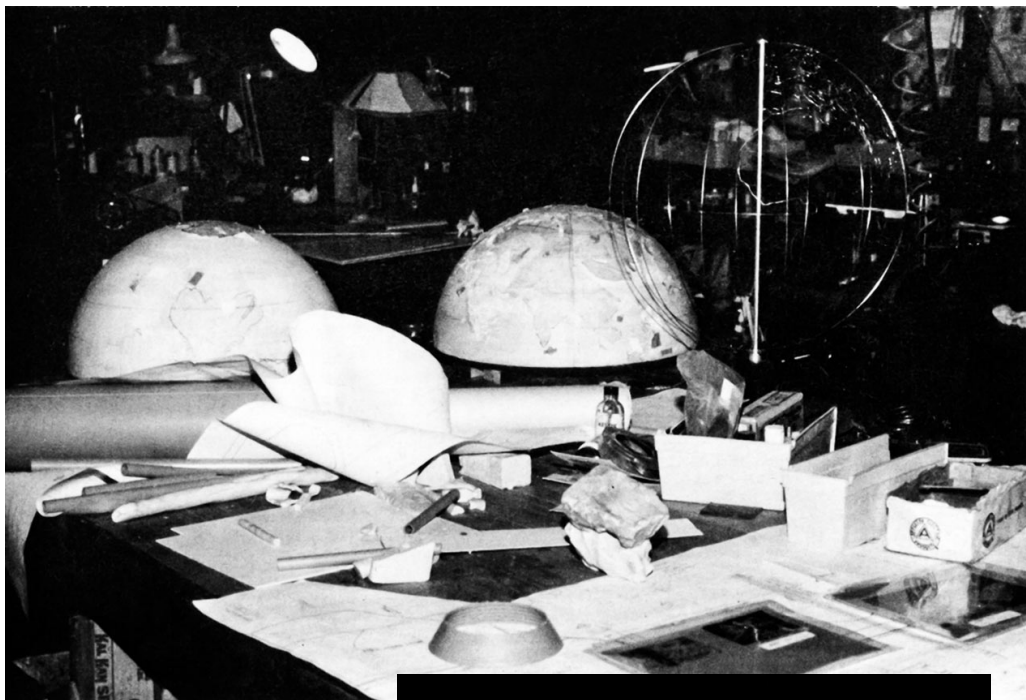
Photographs and Memories — Ralph Hammeras 50

In a career spanning almost half a century, effects pioneer Ralph Hammeras worked on some one thousand motion pictures — gamering, in the process, four Academy Award nominations and one Oscar. As recounted in his own words — put to paper nearly twenty years ago — Hammeras reminisces about his early days in the film business, his development of the "glass shot" and rear process photography, and his work on such significant effects productions as *The Lost World*, *Just Imagine* and *20,000 Leagues Under the Sea*. Edited by Don Shay.

FRONT COVER — James Bond at the videogame table in *Never Say Never Again*.
A mother and child are vaporized in *The Day After* — BACK COVER.









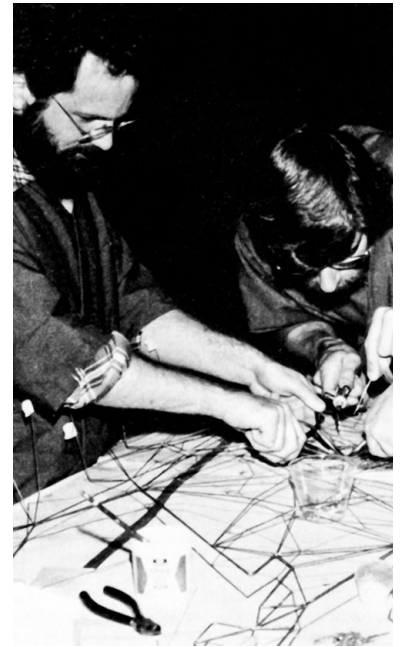
Since one of the countries had to rotate in space during the game, a wire-frame representation was constructed. Harry Stover, Mike Speaker and Illyanna Lowry solder the faceted segments together. / Nonrotating countries were rendered on glass. To generate an appropriate image, however, a three-dimensional buck was built to match the receding perspective of the game, with a faceted approximation of each country's geography drawn on its walls. / The buck was assembled over the game table and photographed in flat perspective, then traced onto a large pane of glass covered with black paint. Following the tracings, Harry Stover and John Shourt carefully scribe away the paint, producing an array of interconnected lines which could then be backlit with laser light to achieve the desired scintillating effect. / Jim Dickson, director of photography for the game sequence, ties off a fiber optic bundle connected to the rear side of the panel representing France. When lit, each fiber optic bit signified a city on the map. /

cursor positions and the missiles, plus various graphics elements and the points running up at the top, it got pretty involved — but we didn't want to lay that on the optical department, which was already busy doing all the other stuff. As a result, there were a lot of multiple passes on the animation stand to get all that information together on one VistaVision plate.

At the time we were shooting the live-action, we took great pains to measure off every single angle to all of the important points. We knew what lens and what camera we had used, its height from the floor, its inclination, plus any roll it might have had. Then we measured off the distances from the camera lens to the four corners of the big frame where the holographic image would be, and to the corners of the little video screens the players would be watching. Since the video material wasn't ready before principal photography, we used a white screen on the set so we could easily identify the area that needed to be matted in. Then later, after we produced the VistaVision composite animation plates, we set up a screen at Apogee and projected that plate material onto it. This screen was set in the table to match its original perspective in the live-action shot. As a result, any subtle keystone in the image would be appropriate to that particular angle, rather than just burned in at a straight-on angle, which always drives me nuts when I see it. We also tried to duplicate the subtlety of 525 raster lines by using a screen that was made from a modelmaker's material for wood-sided houses that has a lot of very fine lines etched into it. As it happens, for the given height of our screen, there were 520 or so of these lines, which we enhanced with a very fine pencil point along each one of the grooves. You can see the effect in the VistaVision plate, though it doesn't really translate in the final optical. But my theory is that if all those things are apparently correct, you get the right subtle feeling, no matter how far down the line you are. In addition, we took the white screen material from the original live-action photography and used five percent of that, double-exposed over the image, so that whatever reflected lighting there was on that screen from the room around it was also on our optical. It helps to give you the feeling of a real surface being there, instead of a cut-out image that looks almost like you're seeing into another room.

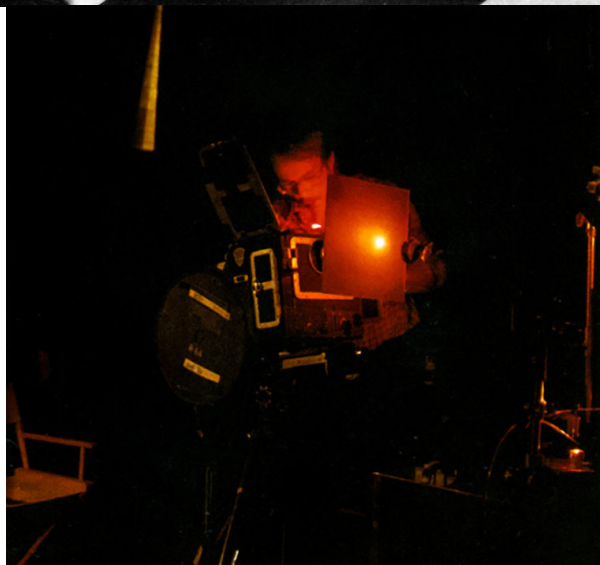
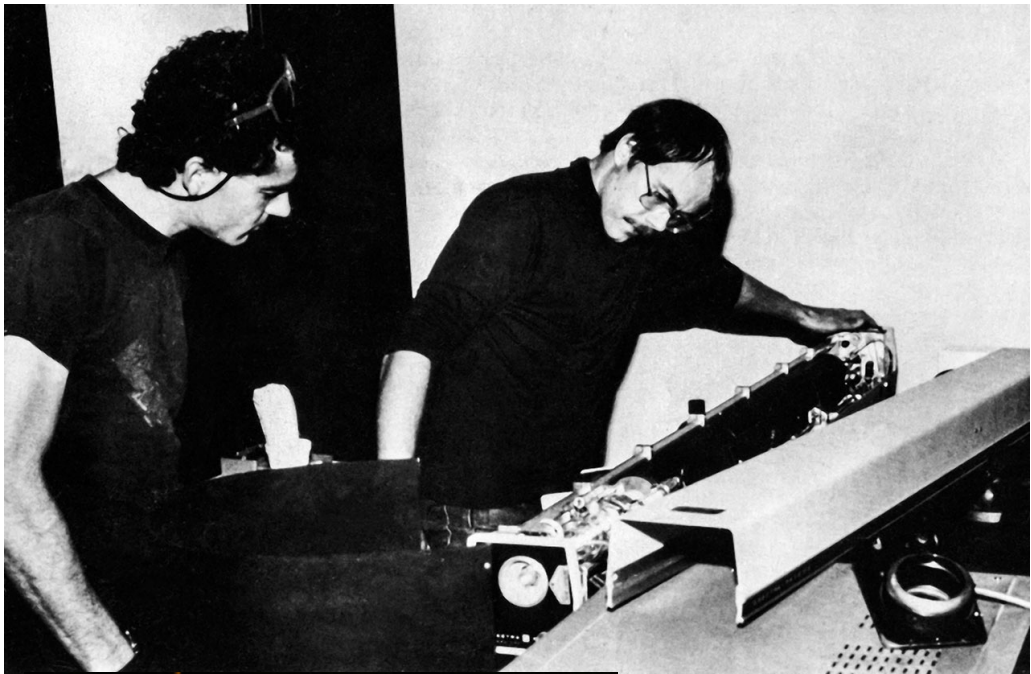
Were you able to pull simple mattes from the white screen area or did you have to go in and rotoscope?

Well, we didn't plan to do any rotoscoping, but no matter how much you try to explain everything during shooting, there's always someone who ends up having his thumb in front of the screen. Although I was behind the camera on much of the plate photography, in this case I wasn't because I was running the slide projectors for the interactive lighting. So I wasn't in a position to tell, necessarily, if there was a problem. And sure enough, Kershner and I would be sitting in dailies the next day tearing our hair out because somebody's thumb would be going over









look to it. So we went with the large-scale approach, using matte painting sized glass.

And you actually photographed it over the game table?

Right. We took the table, painted it black and set it into position on the stage at Apogee. Then, every time we lined up a shot, we actually put whatever was there over the table. That way, when we illuminated the object with our laser light from behind, the light coming through the lines and the facets on the glass was also reflected down onto the surface of the table and would thus be double-exposed over the live-action image — which, of course, helped the illusion of the “holographic” image actually being there.

Were the specific details of the game pretty well worked out before principal photography began?

No, they weren't. We had our basic concept, but the finer points were still a matter of discussion. Prior to settling in on a final plan for the game, Kershner and I agreed that we should first get a rough cut of the live-action to see how it cut dramatically. At that point, we could see how many shots we had and where we were. Then, we could come up with a final decision as to the rules of the game and what kinds of things needed to happen. So Kershner and I worked on the cut and, once we agreed on it, were able to come up with a satisfactory blueprint for the game. Then he went back to England — since his hands were full putting the whole movie together — and I stayed in California to execute all the effects.

As it turned out, the game is considerably different from our original concept. The way it works now is that inside each facet is a city, and as that city flares up in brightness, it means it is vulnerable and you have about a second and a half to react with your joysticks and fire a laser to capture that territory. The first player to hit that city then owns it, and the territory around that city becomes either red or blue. You can't just randomly fire into the game and capture territories.

Once the facets were red or blue, were these done with gels on your windows?

Yes. We actually had two sheets of glass bipped together. The foreground glass was our etched line glass, and the background glass was a ground glass sheet that would just image the light source coming to it. We started the first couple of takes with laser light and decided that although it looked more interesting, it was harder to see. So eventually, we went to a process of exposing gelled lights through a window matte for each facet.

Was the game imagery simply double-exposed over the live-action plate, or were there mattes involved?

Both. Sometimes we'd use partial density mattes to help us hold back an area; other times we let it go through a hundred percent.

How about the cruise missiles fired during the game?

Miniatures were used for the scene in which Bond and Domino jump their horse off the fortress walls. A hard-plastic model horse was purchased, then cut into pieces and reassembled with articulated joints. Illyanna

Lowry adds some early detailing to the horse, which was subsequently covered with felt and outfitted with miniature riding gear. /

Although the primary movement of the horse and riders was generated under motion control, animator

Harry Walton was called upon to add subtle movements via stop-motion animation. Since the hand-

animated portions of the scene were nonrepeatable, alternate beauty light and red phosphorus matte frames

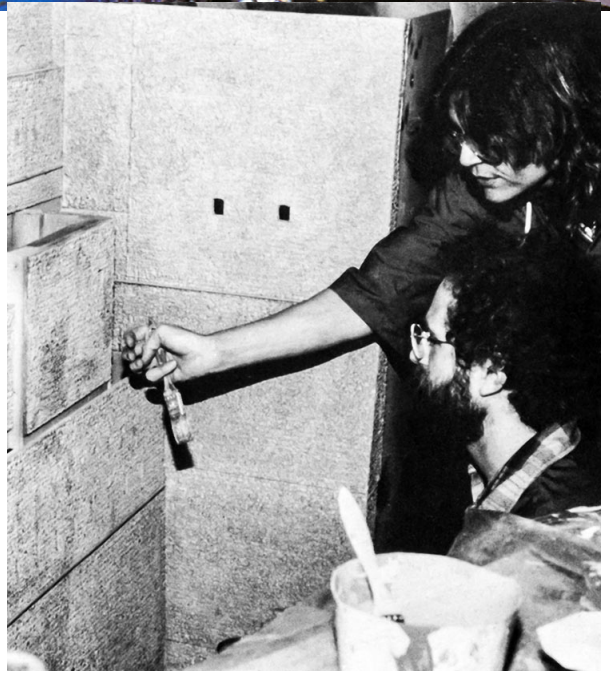
were exposed — then skipped out and separated in optical. / The fortress walls

— being detailed and painted

by Harry Stover and Catherine Nobel — were constructed in miniature. /

After determining that additional aging and detail were required, David Druer



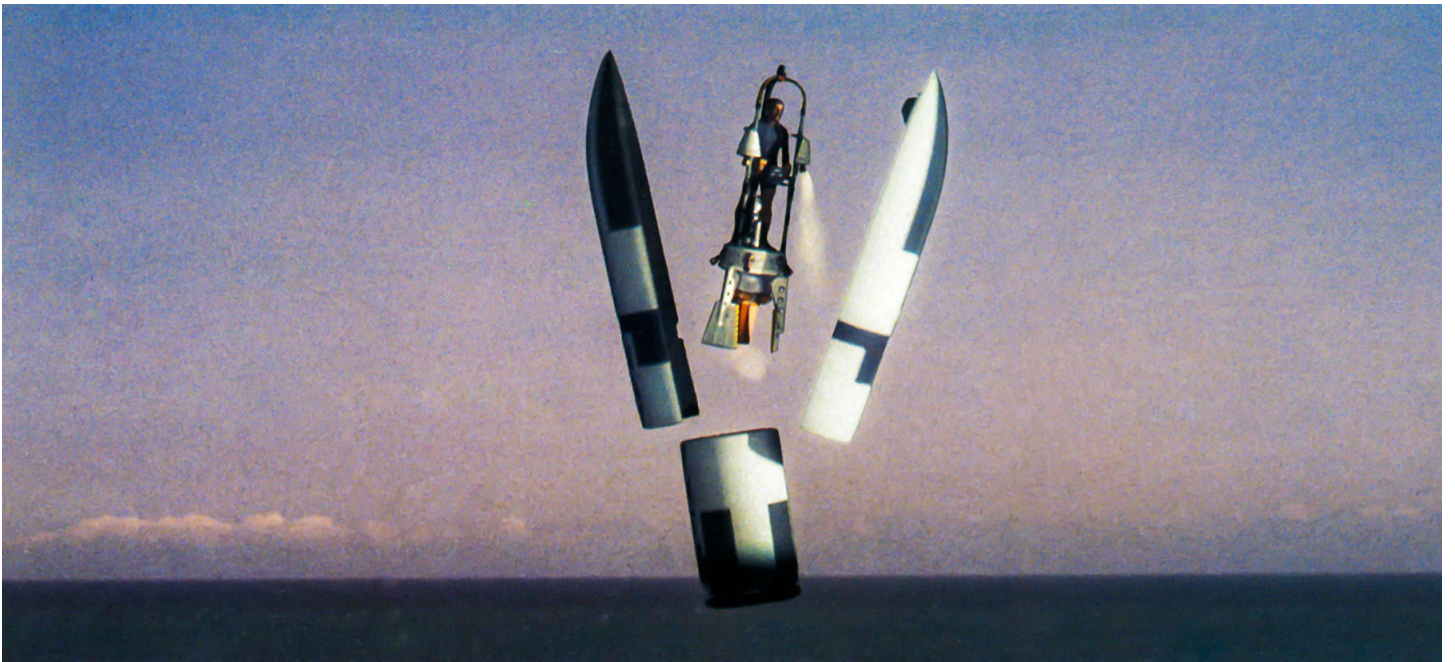


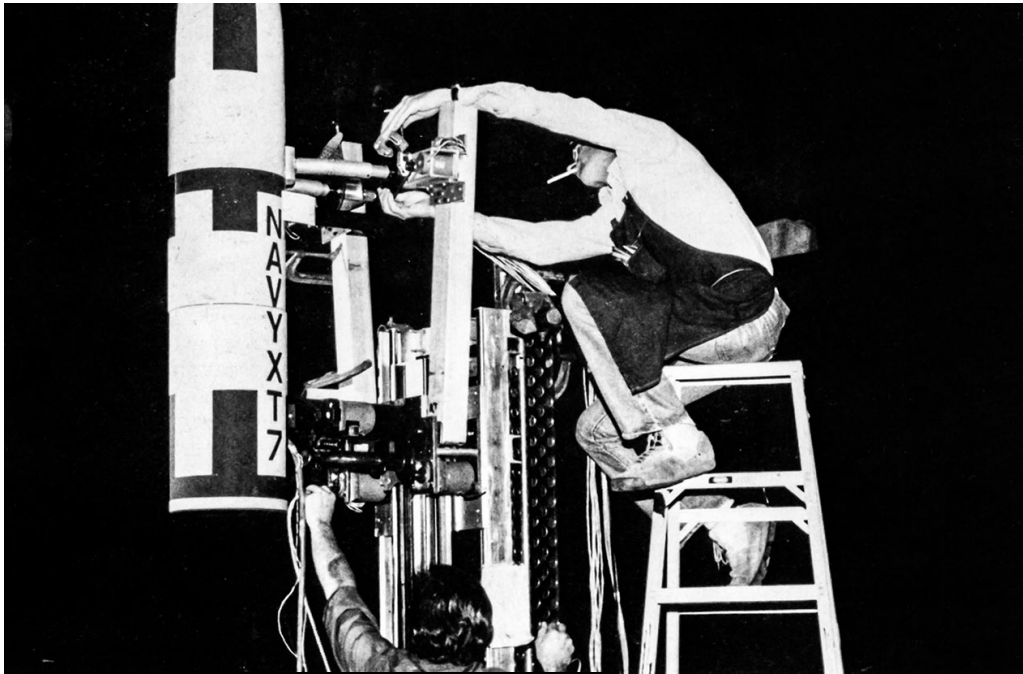
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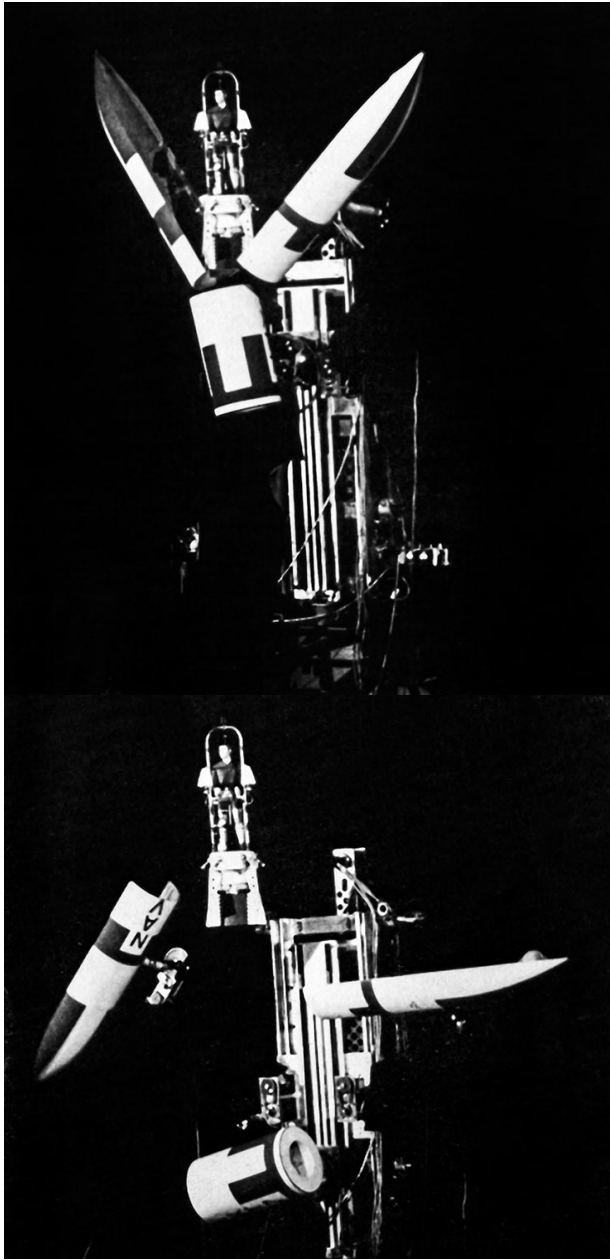












projection material turned out to be strictly insurance.

How much time did you end up spending on the film?

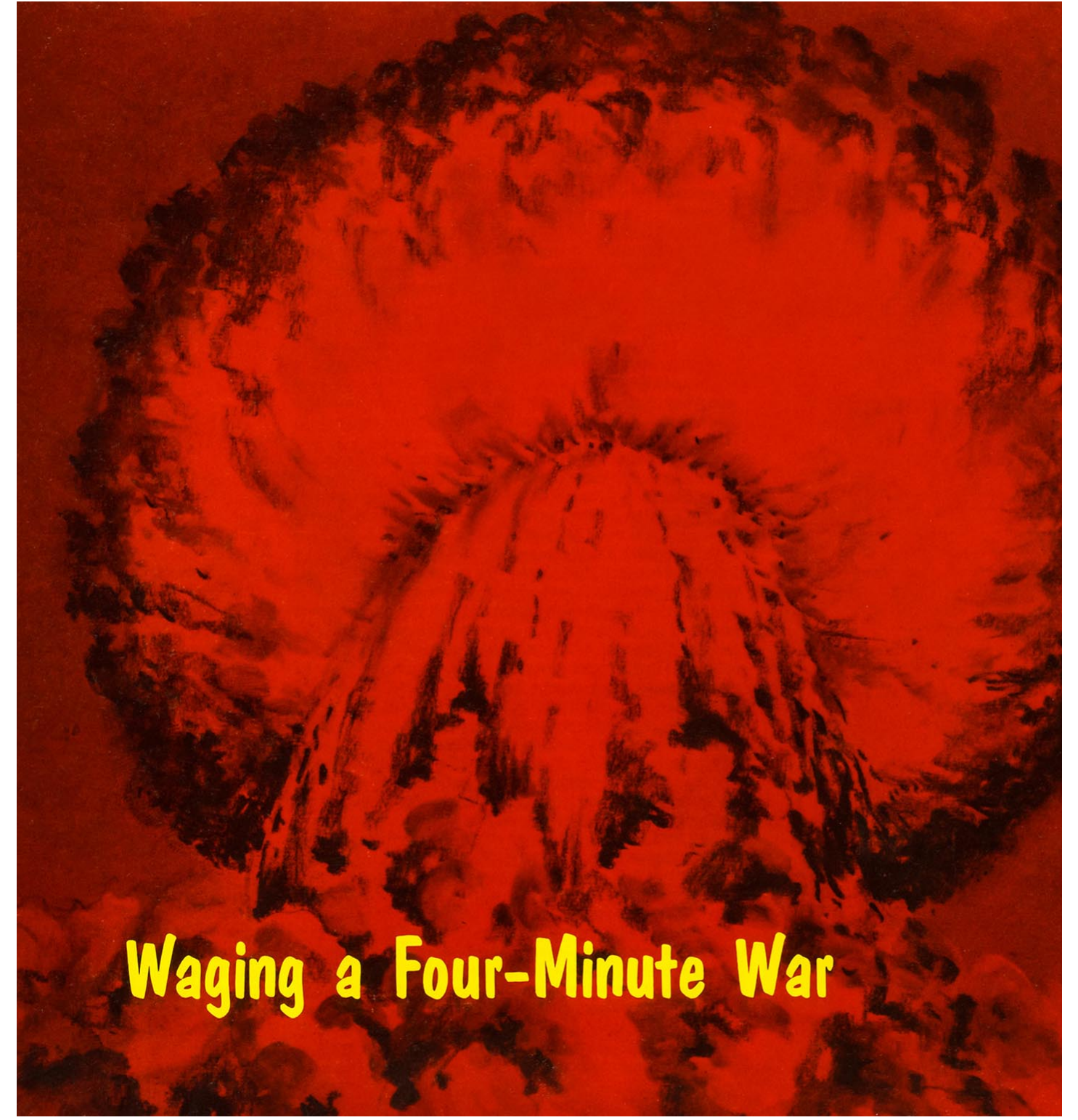
A total of nine months. I was overseas for about four-and-a-half months, and the balance of the time was at Apogee. Between mid-February — when I got back — and the ninth of July, we turned out fifty-five effects shots.

Having worked in both 65mm and VistaVision, do you have any comments on the respective advantages or disadvantages of each?

In a perfect world, for my money, every movie would be shot in 65mm. It is clearly the best way to go. The usable frame area is considerably larger, and once you've seen 65mm dailies, you don't want anything else. The difference is night and day. But VistaVision is a good format. If it's joined to the original photography at the right place, and integrated properly, it holds up very well. And there are other practical considerations. For one thing, the fact that you can only get 65mm processed in one place in the world makes working with it overseas a real pain. Plus it's more expensive. To do the same amount of work in 65mm that we did in VistaVision would have cost us considerably more. So there are always tradeoffs.

For the most part, I'm pleased with our work on *Never Say Never Again*. Our intention was that if we all did our jobs properly, hopefully no one would know that there were visual effects in this film. We were locked into reality constantly. Beyond the basic Bond/SPECTRE thing, we didn't want to make anything look larger than life or phony. But what is larger than life? A lot of the live-action stunts in this film are a lot more spectacular and unbelievable than anything in the effects area. We were there to do things that either physically couldn't be done, or would have cost too much money to do, or would have required sets that just didn't exist. From a production point of view, if it wasn't feasible to build a particular set or shoot a particular shot at a particular time, then we were there as a stop-gap to plug in all those holes. It's a difficult position to be in, and much more demanding than the more usual type of effects work. On *Blade Runner*, I became as much an art director as anything else — and it was fun. We were creating images from scratch; and if we had a problem, we could be creative as to how to solve it. We have a matte line on something? No problem. We'll put a bright light in there and it'll glow and everybody'll love it. But you can't do that on a cruise missile in bright daylight. So we were constantly stuck with fighting the reality factor. Even the color of the cruise missile was a problem — mainly because it was designed by the government not to show up in the sky. So if we wanted to be authentic — and we did — we always had those kinds of things to deal with. Many of the reviewers have commented that *Never Say Never Again* is James Bond without all the gadgets and gags that have come to be associated with the series. Well, there's just as many gags and outlandish things in this one as

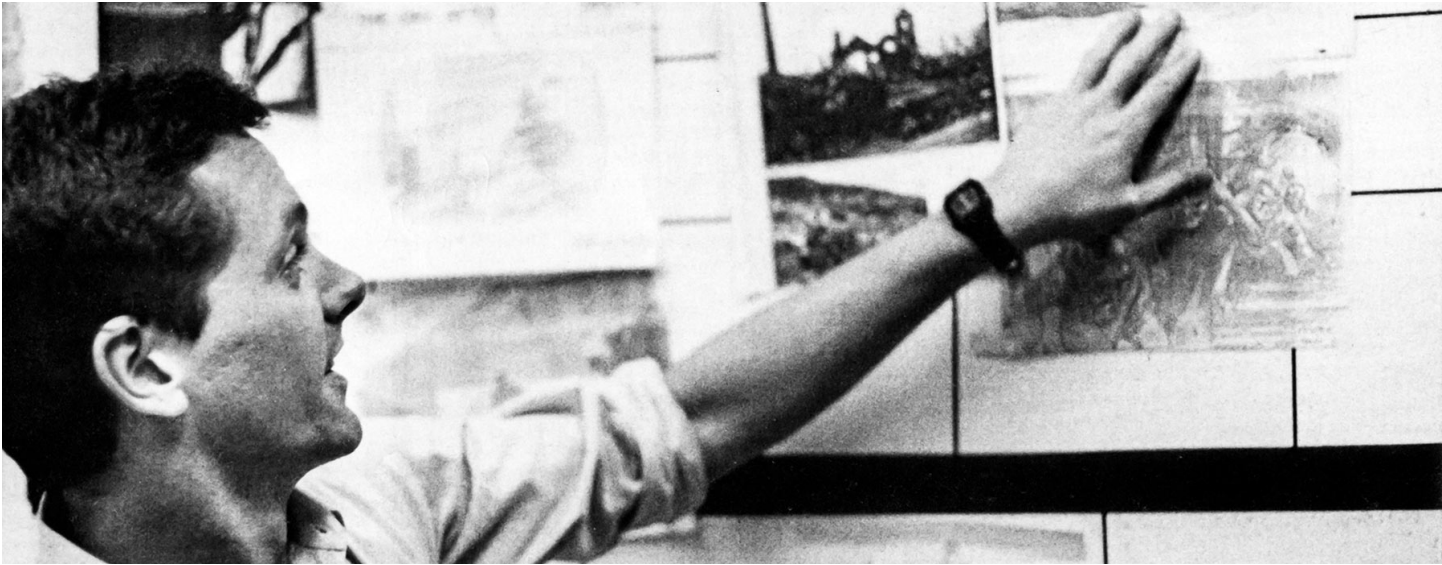
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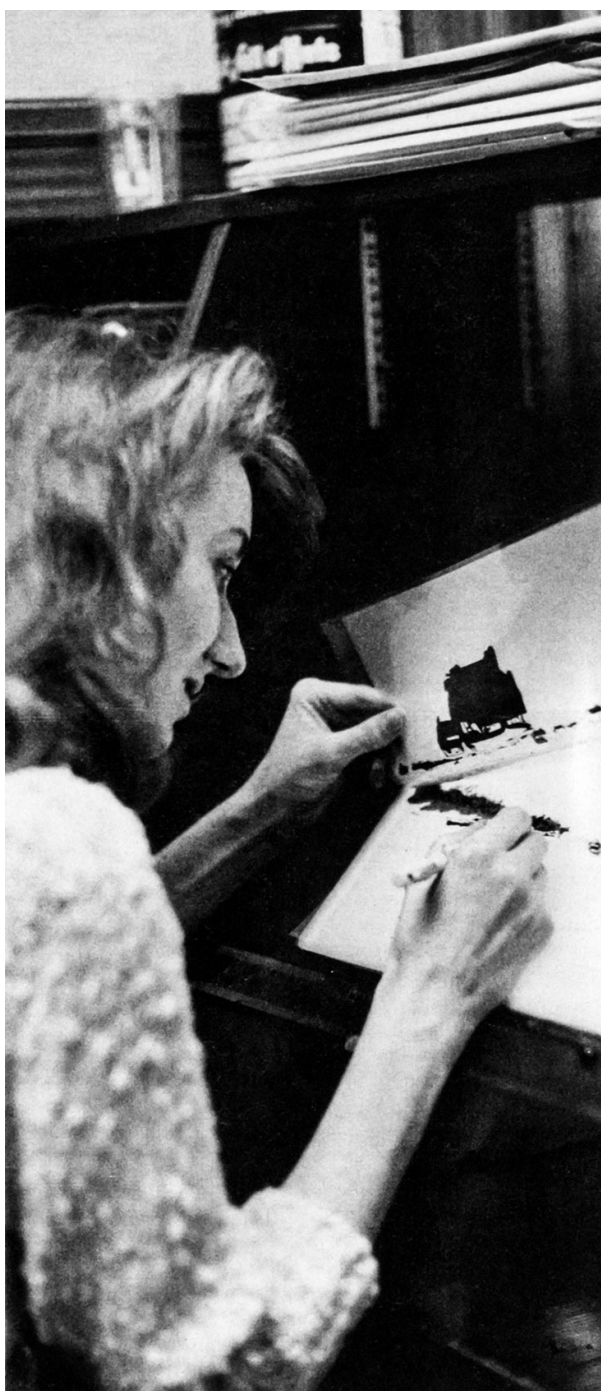


Waging a Four-Minute War



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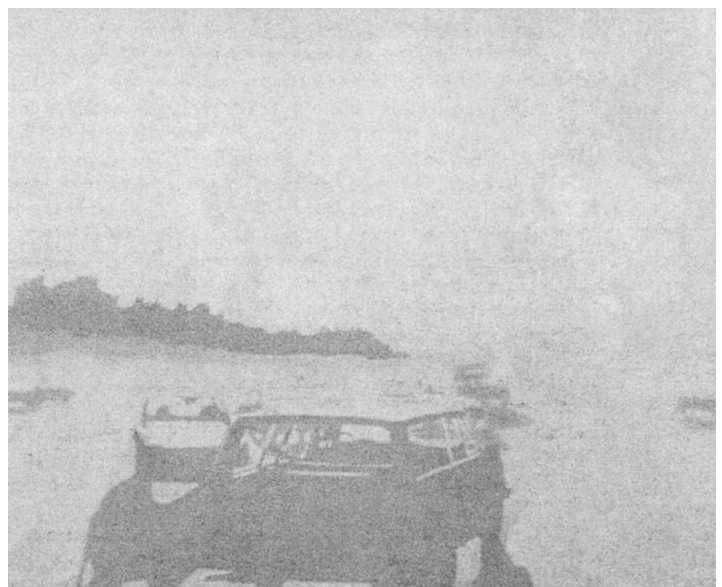


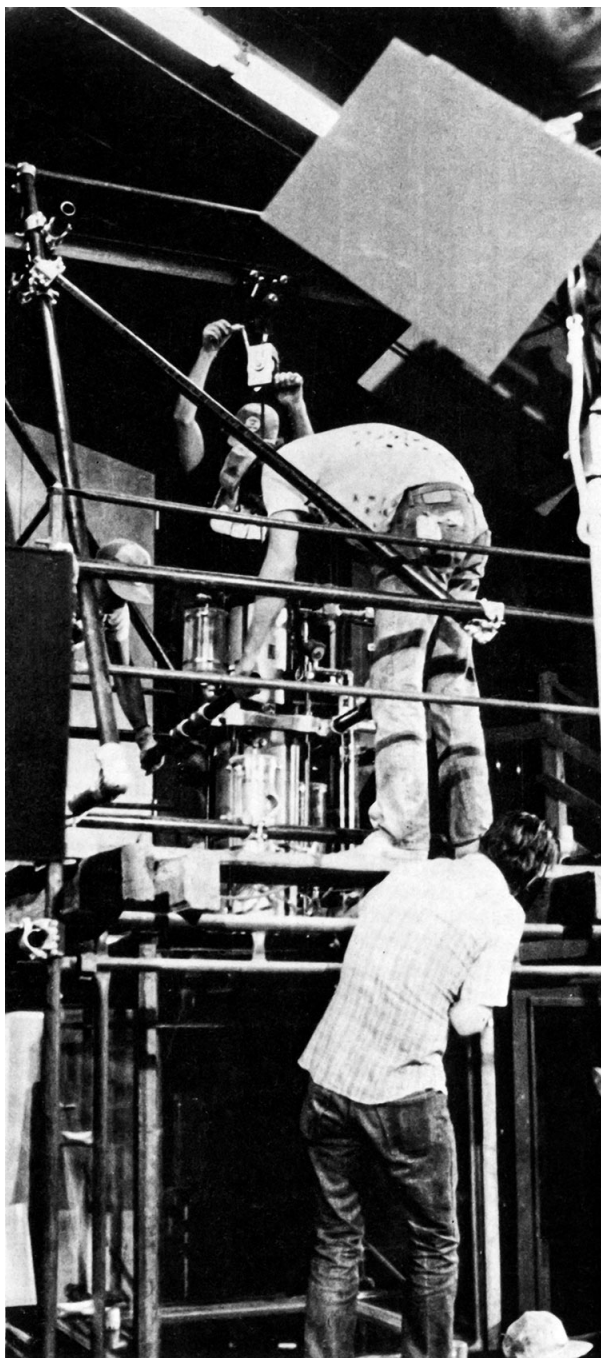
the dye before the slug was fired, and we could vary their influence however we wanted. There were also valve times to consider, valve pressures, sequencing operations and so on. We had so many parameters to consider that we could have explored them virtually ad-infinity."

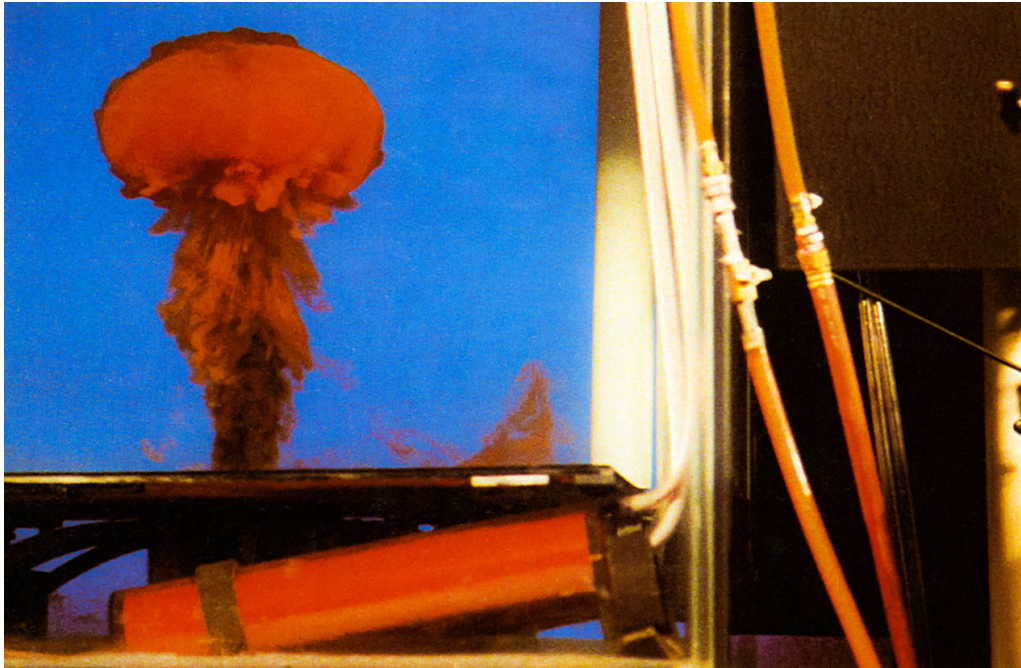
With so many variables involved, graceful eruptions of dye that would slowly rise up into cascading mushroom clouds could not be created on the initial test run. In fact, it proved to be a slow, painful process. "We would go and see Chris on the stage," Nancy Rushlow recalled, "and watch him as he anxiously punched a program up on the computer. Then the piston would pull back and fire, the dye would just slurp out in a glob and that would be it. But then the time came when we saw less and less of him, and we knew something was up. Finally, he called us to the stage one day and punched out his program. The piston pulled back and fired, and gave us our first mushroom cloud. We all went nuts. Ironically, it was like watching a birth. It was beautiful."

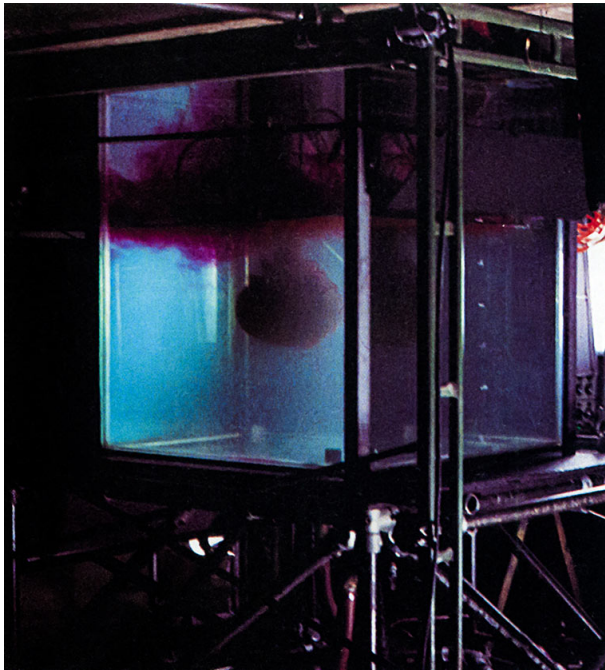
While the cylinder/piston device successfully produced mushroom clouds, there were other problems to be dealt with. Custom computers had to be built; cameras had to be altered for high-speed photography, since the clouds needed to be shot at 120 frames per second; and all the electricity on the stage had to be relocated at a safe distance from the several thousand gallons of water that would be needed. And to photograph the clouds amid all that water meant that those many gallons had to be carefully filtered in two large holding tanks. "L.A. water was terrible," said Dierdorff. "We'd fill the tanks and literally couldn't see out the other side — and this was out-of-the-tap drinking water! So we had to put it through extensive charcoal, color and sand filters to remove all the particles and color. At that point, the water was crystal clear and clean; but we still had trouble cleaning up the image for matting, because the tank glass and even clean water tends to distort color."

Creating a clean matting process proved to be another problem. "We had a cloud, but we didn't know how we were going to pull a matte off of it," Dierdorff added. "There are a number of techniques — density mattes, regular bluescreen — but we were dealing with water and we weren't sure how to light the cloud and screen evenly enough. And since we wanted to shoot the clouds at a high frame rate — to slow the event down and make them appear more huge — we would have needed too much power to light a regular bluescreen. Neon bluescreen was therefore out of the question, because it wouldn't put out enough power. So Rob suggested front projection bluescreen, because there is so little light loss that it seemed perfect for getting a decent exposure on film without having to worry about baking ourselves on the stage." Front projection also eliminated the possible "blue spill" problems inherent in rear-lit bluescreen photography. Meanwhile, the cloud itself was lit by thousand-watt bulbs — three banks of twenty each — to enable the high-









best be matted into background plates. "We shot a plate of the Hollywood Freeway near Cahuenga Boulevard, as it goes past Universal Studios, and we composited this with our mushroom to see what problems we'd have with getting the matte right. I think that, until that point, ABC was a little blind as to what they were going to get from us; so we had to start some place. At the time, we were using a grey-colored dye. We didn't have the front projection system set up for the first tests, so we projected white light onto the grey cloud and filmed it against the green background of the water. The result was workable, but we were losing too much detail." Eventually, a deep red dye was used for the cloud cap, and an almost black-colored dye for the stem. This not only increased the contrast between the cloud and its background, but also gave the cloud a more realistic look of depth, since the black dye would mix in with the reddish cap and create areas of darker turbulence.

Once that problem was solved, Regan experienced some unexpected complications because of the nature of the Scotchlite front projection screen. "Scotchlite is made up of tiny beads of reflective material and, unlike the smooth neon blue screen, has little gaps that showed up as little white points of light in the matte area around our clouds. One answer would have been to move the screen out of focus; but that would have been impractical, because we would have had to place it too far away from the tank. We were always fighting this complication, and solved it by fine-tuning the setup carefully, by using extra cover mattes and by tweaking our initial mattes very carefully. Despite the best efforts of Regan — ably assisted by lineup person Peg Hunter and printer operator Betsy Bromberg — the problems of lining up the mattes would never completely be resolved; and in some of the final composites, the top of the mushroom clouds appear to have an overly-smooth edge. "The classic problem with front projection bluescreen," Chris Dierdorff remarked, "is that the more you go off the axis of the projector, the larger the shadow, or halo, becomes. As the cloud grew in the tank, it went more and more off-axis, thereby casting a bigger shadow and making the matting that much harder."

While problems with the bluescreen matting process were being resolved, Rob Blalack decided that he wanted to go one step further in the creation of the mushroom clouds themselves. "I wasn't happy with the texture we were getting, and I wanted to build a new tank and basically double the size of the piston. I didn't realize, however, that my idea would become a major moon launch proposition."

The task of mounting such an effort fell to Larry Stevens, who was sent back to the drawing boards to design a bigger and better piston. "It took a few cocktails in a local bar," he joked. "I designed most of the thing on bar napkins over a period of weeks. There were no blueprints drawn on any of this. It was all just winged as we went along. I had to figure out how to pull all the

To create the shape of a nuclear effects mushroom cloud, injected into a large front-projection screen, allowed the matte to be matted into the tank, the rotation of the tank still at the bottom. Success small piston the device in the buoyant bottom. mushroom formed Ultimate large tank problem and so the mushroom using the Praxis of

sized where the shadows would fall if a real blast occurred some thirty miles away — making mattes to hold out the shadow parts of the frame. This involved many different elements, including two for each shadow, one for the dark sides of distant clouds, and one for the trees, for all of the ground, for all of the sky. I also had to do animation based on individual cars, with the hot areas highlighted. These hot areas went through the spectrum — from a coolish blue, through reds and golds, to a very hot white — and we did that using filters on the animation stand. To help add a sense of depth to all of these elements, we filmed them with pieces of frosted plexiglass in between, so that the more distant objects were farthest away from the camera and the closer objects with the hardest shadows were up close. We had up to ten layers of matte elements and plexiglass for any one shot, which really helped make the far background objects seem soft — as if they were distorted by more atmosphere — and the foreground object much sharper in contrast. The layers were also important in the placement of the clouds, because they enabled the cloud elements to be positioned behind different objects and blend in better with the horizon.”

Fortunately for Kean — and her cel painters, Candy Lewis and Martine Tomczyk — most of the shots involved a background plate in which nothing moved, so there was no need to articulate the shadows each time. One sequence, however, did present such a problem. “When Danny and his father are running outside the farmhouse, and the blast occurs behind them, we had to do an individual painting for every frame. We went into the frame and rotoscoped Danny and his father, because they were going to be silhouetted against the background of the initial white flash. We did only parts of their bodies. We had to make two sets for every frame, one for the actors and one for their animated shadows. Also, there were blades of grass in the foreground that needed to be darkened appropriately as the light moves across the ground, so you could see the silhouettes of the grass. There was also some sky animation. Once again, to add depth to the whole image, the skypaintings were on the bottom of the plexiglass stack, while the grass was in front.

“To photograph all of these paintings, we went to a three-minute exposure to burn in the hot areas. Some of the shots were two hundred frames long, and I remember shooting in the optical lab for nine hours, pushing the button on the animation stand, waiting three minutes for each frame, changing the artwork, and then pushing the button again. The whole process had to be done a couple of times for the changes in color we needed as the blast occurs and the images move through different shades.”

In the finished film, these visions of Armageddon are preceded by the almost equally chilling sight of American missiles being launched to counter an incoming Soviet attack. In terms of the effects production, however, the missile contrails created to







Pinkham recalled, "but once that process was fully underway, I separated from that work and started developing the system that would produce the contrails. Basically, what we had to do was create the plumes behind the missiles — the steam and vapor trails seen in long shots of Kansas City and surrounding areas as the missiles are launched from their silos. Once again, we used a water tank — this time, one about five feet high, holding two hundred gallons. Then we built a special armature, with three axes of movement. It could move up and down, from left to right, and the little arm on it could twist. To this arm, we attached a little nozzle connected to a tube through which we could shoot pressurized paint — actually just regular Tempera poster paint."

The armature was hooked up to a computer motion control system. Daniel Nosenchuck provided calculations for the trajectory of actual Minuteman test launches, and determined the curvature if the missile were viewed from a certain specified distance. For instance, if in the shot to be filmed, the missile was approximately three miles away, Pinkham could use Nosenchuck's calculations to accurately plot a real missile's trajectory, and then duplicate that with the motion control armature.

"It all sounds a lot easier than it really was," Pinkham noted. "One complication we hadn't encountered with the mushroom clouds, for instance, was the use of real-time motion control. We couldn't shoot a frame, stop the camera, move the paint nozzle, and then shoot another frame. Instead, we had to have the little paint nozzle spew out paint in real time." Because the armature moved through water, it also produced some undesirable turbulence in the jet stream itself. To help reduce this problem, Larry Stevens winged the jet arm to cut down on drag. In what may be the first use of motion control in a water tank, the contrail jet arm moved approximately three-and-a-half feet vertically during shots, which normally lasted five to six seconds. To heighten the contrast, the paint was once again red in color — later changed to white in optical.

"A lot of different elements had to be developed at the same time," Pinkham said. "It was a hair-raising adventure, because for a while we didn't know if we were going to be able to pull all the components together and make the approach work. For instance, up until just before we had to produce the effect, the computer software was not available to actually film at 24 frames per second — or even 20 frames per second — and be able to pull an armature in real time through the water. So it became a matter of getting the software up to speed in order to do the effect. Also, Kodak had just come out with their high-speed 5293 film stock two months before we needed it. Without it, we wouldn't have had the lighting capabilities to shoot the effects

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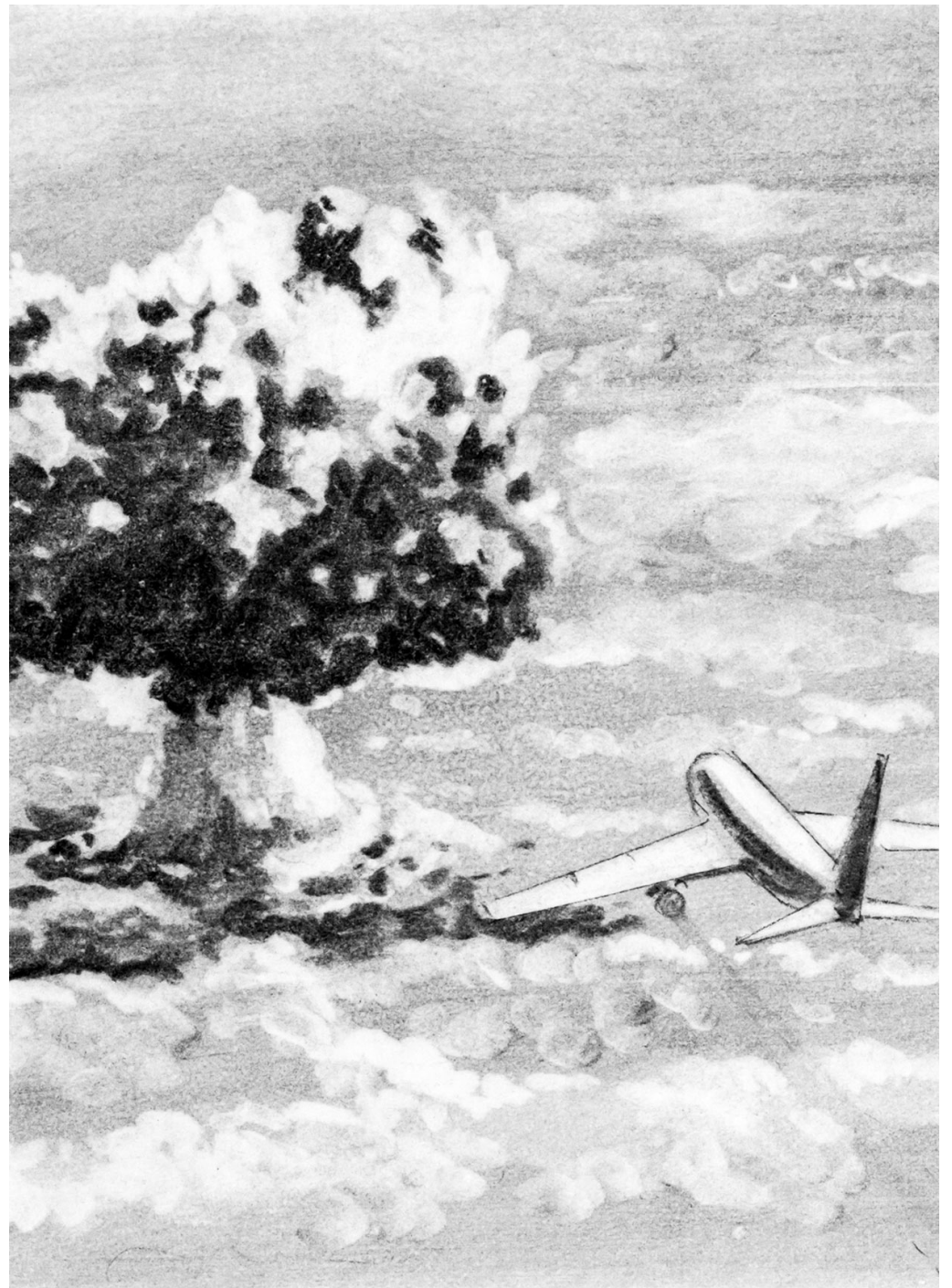


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camera speeds, and the effect worked nice of flickering firelight. Then we did several distant smoke."

Numerous network requests to slightly al ings proved problematical, since every chang to do all the individual passes over again. "I c position," Holman explained. "They wanted just right, because they were the only real I tion. But having to do triple passes on each and after we got through, they'd say, 'Well a little darker or a little brighter?' Or they w more rubble on the left or on the right — a on TV, it wouldn't even show up." In one ins to accentuate the smoke in the day shots, to lower resolution quality of television. But felt it was too much and asked her to lessen ti As a result, the smoke appears very static or the subtlety Holman had wanted to include

Not all of the effects in *The Day After* wer To produce the vaporizations of humans and blast sequence, and for some of the fallout elsewhere in the film, the producers hired I and operated by Mike Minkow — who had pr the title department at Modern Film Effects established four years ago, and has since ci ticals for numerous TV commercials. In addi laser pistol beams for *Return of the Jedi*, t and some opticals for the upcoming *Star T* became involved with the *The Day After* wI proached to create the vaporization effects, early on by the network, then discarded, o again towards the end of the production.

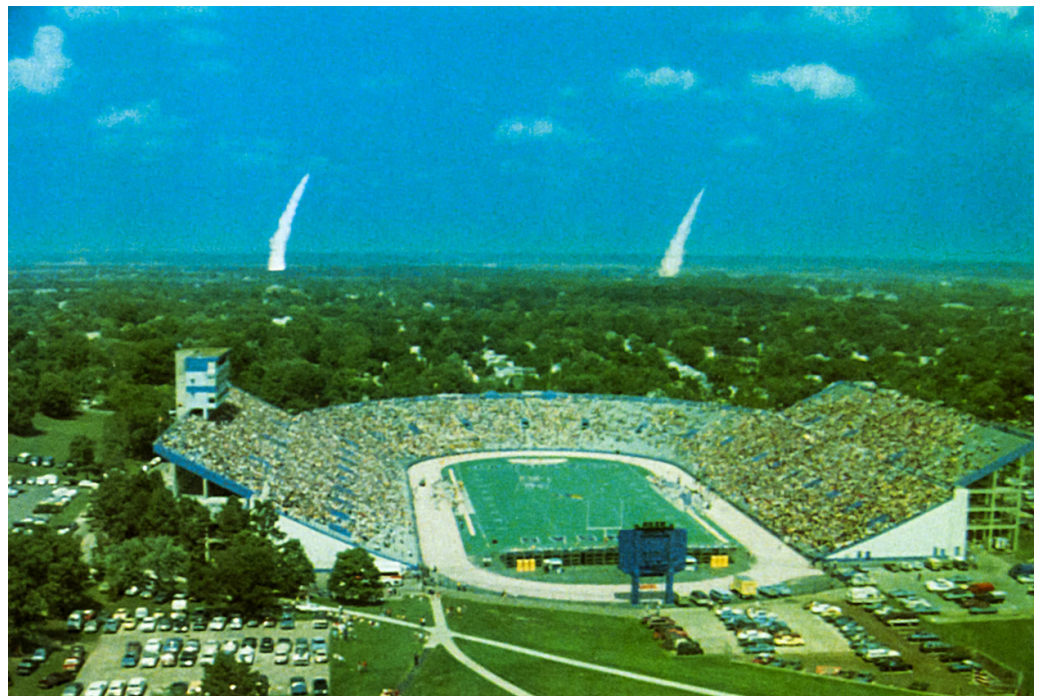
"Basically," Minkow recalled, "they want sitory effect in which we would go from a l a metamorphosis of color into a skeleton, and disappear just before the film quickly i image. I had to give them a budget that ti To do one frame really well was a lot easier with a lot of frames not so well, so I told th frame and do the effect, getting away fairly that's what they decided to do. The skeleton simplistic animation. In fact, we were asked i too much — to be more subliminal than through a couple of evolutions on the whole we showed a little more of the bone structur elements that looked like the people's bloo



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Not all of the effects in *The Day After Tomorrow* were produced by the same team. To produce the vaporizations of humans and the blast sequence, and for some of the fallout elsewhere in the film, the producers hired Modern Film Effects and operated by Mike Minkow — who had previously worked on the title department at Modern Film Effects.





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